DOCUMENT RESUME

ED 204 443 UD 021 499

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TITLE Does Changing School Environments Change the Academic Performance of Minority Students? Revised.
SPONS AGENCY National Inst. of Education (ED), Washington, D.C.
PUB DATE 27 Apr 81
GRANT NIE-G-78-0129
NOTE 19p.; Paper presented at the Annual Meeting of the American Educational Research Association (Los Angeles, CA, April, 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Achievement Gains; *Black Students; *Classroom Environment; *Educational Change; Educational Environment; Elementary Education; *Racial Composition; School Demography; School Desegregation; Student School Relationship; *Transfer Students
IDENTIFIERS *Missouri (Saint Louis)

ABSTRACT

This paper describes a study that was conducted in the St. Louis elementary schools to examine the effects of environmental changes accompanying the relocation of black students to new schools. Students' academic gain in the year prior to relocation was compared with their growth rate in the year following relocation. The study produced five major findings: (1) increases in classroom mean achievement levels had a positive impact on black students' academic growth patterns; (2) moves to majority black classrooms improved academic growth rates, while moves to majority white classrooms depressed academic growth rates; (3) the optimal move for a black student originating in a majority black classroom was one in which the receiving classroom was between 50 percent and 95 percent black and had a higher level of academic performance than the sending classroom; (4) high achieving students tended to experience larger academic gains in receiving schools than in their sending schools, while low achieving students has smaller gains in their receiving as opposed to their sending schools; and (5) changes in teachers' education and experience, and teacher pupil ratios did not appear to be strongly related to academic growth. Limitations of the research are discussed at length and implications for administrative policy are suggested. (Author/APM)

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ED204443

Does Changing School Environments Change The Academic Performance of Minority Students?

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Presented to the American Educational Research Association, Los Angeles, California, April, 1981, revised 4/27/1981.

This research was supported by the National Institute of Education through grant #NIE-G-78-0129. The opinions in the paper do not necessarily reflect the position or policy of the NIE.

UD 021499

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INTRODUCTION

During the past quarter century, increased concern with minority education has yielded significant changes in education. Advocates and opponents of school desegregation have engaged in many hard-fought battles, massive funds have been allocated for compensatory education programs, and countless innovations aimed at enhancing the quality of minority education have been implemented. Perhaps the most serious problem associated with the education of minority students has resisted solution. A strong link still exists between students' social origins and their academic performance, and little progress has been made toward the development of strategies to ameliorate this situation.[1] The purpose of this research is to contribute to the formulation of educational policies aimed at reducing the cognitive inequalities between social groups. While the study deals with the academic achievement of black students, we believe its findings are relevant to other groups of children who do not have high achievement in school.

One reason to be acutely concerned with the gap in academic performance that exists between racial groups arises from the attention which is currently being given to students' level of basic skills. A back-to-basics movement, which has gained impetus from the widely publicized decline in standardized test scores as well as the public's growing perception that high school graduates are not equipped with the basic skills necessary to function effectively in society, has become a strong force in American education. Probably the most significant manifestation of this movement has been the advent of minimum competency testing. Already two-thirds of the states have mandated some form of competency testing, and the remaining states have

legislation pending or feasibility studies in progress.[2] As the results of these studies are reported, a dismal pattern is materializing -- minority students are failing in disproportionate numbers. In Florida, for example, 77% of black high school juniors failed the mathematics section of the competency exam administered in October of 1977. Only 24% of the white juniors failed the same test. Black students fared a little better in 1978, however, a large gap in mathematical skills was still evident -- the failure rate was 60% for black 11th graders[3] .

Another reason to focus attention on the difference in academic performance levels across social populations stems from a belief that the persistent presence of a substantial black/white achievement gap reflects a lack of access to equal educational opportunities for minority students. One possible definition of equality of educational opportunity focuses narrowly on the extent to which school resources are distributed equally among all students. The basic argument against defining equality of educational opportunity exclusively in terms of equal inputs to different schools is that children enter public schools with a large discrepancy in abilities due to individual background, and that exposure to equal school resources may merely serve to perpetuate these initial differences. If the American system of public education is responsible for creating change in students, then studies are needed in which efforts are made to change the educational outcomes achieved by students. In the case of equal opportunity, this would imply that studies are needed which enquire into methods which might raise the educational performance of minority students.

At the present time, the transfer of students from one school to another is a common occurrence in urban school systems. This situation can be traced to factors such as legal decisions related to school desegregation, voluntary desegregation programs, school utilization problems, and the manipulation of attendance areas to accommodate changing residential patterns. The existence of these transfer programs led us to ask whether the relocation programs might be used to increase academic achievement as well as solve problems of integration and school utilization. In particular, the objective of the research is to determine how pupil relocation policies might be used to improve the academic achievement of black students at the same time that relocation takes place. We turned to a voluminous literature on "school effects" for guidance as to what factors might be useful in raising the achievement of minority students. The research endeavor is still in its infancy.[4] Only fourteen years have elapsed since the Office of Education sponsored a report entitled Equality of Educational Opportunity,[5] which was groundbreaking research in this field. Since then, enormous methodological obstacles have had to be discovered and then overcome to enable advances to be made.[6] The major difficulties have been in separating the effects of schools from the effects of the individual's background. Also, the quality of much data has been poor. There has been an absence of pupil-specific data and in much of the previous research the effects of changing school environments had to be estimated with statistical procedures rather than observed directly. Most important, nearly all of the research which estimated the effects of moving a student from one kind of school environment to another did so without studying actual movement of pupils. In this study, the longitudinal nature of our data permitted the direct investigation of the academic effects that result from changes in educational environments. Thus,

the research can inform educational policymakers as to the relative effectiveness of different intervention strategies concerned with eliminating the academic inequality which exists between different populations of students.

THE STUDY AND ITS FINDINGS

In order to examine the effects of changing school environments, data covering three years were collected on a sample of 624 black students attending the St. Louis Public Elementary Schools. These students were transferred from one school to another as the result of administrative decisions. One part of the sample was composed of students who were labelled: "transported for overcrowding at the home school." Another part consisted of students who changed schools as the result of permissive transfers, which are transfers requested by parents and granted by the St. Louis Board of Education only if they result in the reduction of racial isolation at both the sending and receiving schools. The data covers the years 1976 to 1978, and were collected from students in grades three through eight inclusive.

The available data base included three types of measures. First, it contained information particular to each student such as age, race, and academic achievement level. Second, measures of each student's classroom environment were available; for example, measures of classroom racial composition, and the average academic levels of each classroom. Finally, measures of school characteristics were available for analysis such as school size and average level of teacher education and experience.

This study describes the effects of environmental changes that accompany relocation to a new school rather than the effects of changes in educational settings that students might experience while attending a single school. The methods used to determine the effects of changing school environments was to compare each student's academic gain (or growth rate) in the year prior to relocation with their growth rate in the year following relocation, and subsequently to detect whether certain types of moves were associated with changes in academic growth rates. Academic growth rate is achievement at time 2, less achievement at time 1. We have three points in time, and can compute the growth rate in 2 years, one before and one after the move. Changes in academic growth rate thus refer to differences in rate of growth. For example, a student who gains 9 months in the sending school and 8 months in the receiving school, has changed his rate of growth by -1 month.

Five major findings emanated from the statistical analysis.[7] Following is a summary of these findings:

1) Increases in classroom mean achievement levels have a substantial positive impact on black students' academic growth patterns. When the effects of grade level, initial achievement level, and changes in classroom racial composition were controlled, moves in which the average achievement level of the receiving classroom exceeded that of the sending classroom by more than one grade equivalent were associated with an improvement in academic growth rates of almost two months per school year. This means that students' academic gains in their receiving classroom tended to be two-tenths of a grade equivalent greater than what would have been expected given their achievement gains in their sending classrooms. Conversely, moves that

resulted in gains of less than one grade equivalent in classmates' mean achievement level tended to slow academic growth rates by a little more than two months per school year. In short, moving students to environments where their peers' performance is higher, raises their rate of academic growth.

2) In the presence of statistical controls for grade level, initial achievement level, and changes in peers' mean achievement level, students originating in predominantly black sending classrooms (95% or more black) benefit academically from moves into majority black classrooms (between 50% and 95% black), but suffer from moves into majority white classrooms (less than 50% black). Moves to majority black classrooms improved academic growth rates by almost four months per school year, while moves to majority white classrooms depressed academic growth rates by six months per school year. In addition, the effects of moving from predominantly black sending classrooms to classrooms of similar racial composition appeared to have moderately positive effect. A move of this nature resulted in an average academic gain in the receiving school that exceeded the academic gain in the sending school by a little more than a month.

3) The optimal type of move for a black student originating in a predominantly black classroom was found to be one in which the receiving classroom was between 50% and 95% black and could be characterized as having a higher level of academic performance than the sending classroom. This was one of the most powerful findings of the research. A move of this nature was associated with an average increase in students' academic growth rates of seven months when comparing students' academic gains in their receiving and sending classrooms.

4) In general high achieving students tend to experience larger academic gains in their receiving schools than in their sending schools. Low achieving students experience smaller achievement gains in their receiving schools than in their sending schools. However, the sub-group of low achievers whose moves increased the academic performance level of their peers did perform better in their new classrooms than they did in their old classrooms.

5) Changes in the characteristics of school environments that can be directly purchased, including pupil/teacher ratios, level of teachers' education, and level of teachers' experience, do not appear to be strongly related to the academic growth rates of black students in this study. However, the data upon which this conclusion is based were gathered at the school level, which probably resulted in an underestimation of the effects of this set of indices. Hence, no precise statement with respect to this set of school inputs can be made.

INTERPRETING THE FINDINGS

This study clearly did not investigate the effects of what might be termed microcharacteristics of schools -- such as teaching styles, leadership styles of school principals, and the like. Instead, it was directed at school policymakers who must allocate resources and formulate student assignment strategies without much detailed knowledge of what actually occurs inside individual schools. However, an examination of related literature can be used to draw inferences regarding the meaning of the findings.

Edmond's work provides some insight into the finding that increases in peer group achievement levels positively affect a student's own level of achievement. Edmond finds that higher achieving schools are often characterized by principals with strong leadership styles and teachers who possess the feeling that they can exert an important influence on their students. Other research suggests that it is the students' classmates themselves who are responsible for the positive effect.[8] For example, Coleman and his associates (1966) found a significant relationship between the social context of the school and student performance. In addition, Wilson[9] (1967) and McDill et. al.[10] (1969) concur with Coleman's conclusions concerning the influential nature of a school's social context. Generally, research efforts which establish the existence of contextual effects assert that exposure to more motivated peers is beneficial for disadvantaged children.

Recently conducted research by Rist[11] sheds some light on the finding that a black student's academic performance is negatively affected when he/she is moved from a predominantly black school into a majority white school. Rist argues that the behavior of white teachers, which are typically found in predominantly white schools, is a factor responsible for depressing black achievement. While observing a majority white, but desegregated, school in Oregon, Rist noted that white teachers perceive black students to be inferior to their white counterparts. Hence, even the brightest black students were put in the lowest level reading groups, which is bound to exert an adverse academic impact. Also the teachers' negative image of the black student is apt to give rise to a self-fulfilling prophecy[12].

LIMITATIONS OF THE RESEARCH

In examining some general caveats associated with interpreting the results of this research, the exclusive reliance on achievement test data to represent educational outcomes should be considered first. There are goals of schooling other than the promotion of academic performance, and they are ignored in this study. For example, this study did not examine the effects of changing school environments on such things as students' level of satisfaction with school, students' self concept, or social relations between students. These things, however, can be considered as important precursors for academic achievement, as well as desirable outcomes themselves.

Reliance on achievement tests might be questioned for another reason. Probably the most widely argued criticism of standardized testing surrounds the issue of sampling bias. Put simply, sampling bias occurs when a test is normed or standardized on one population and then used to evaluate the performance of individuals from a different population. Applying the concept of sampling bias to this research in particular, it might be hypothesized that utilization of the Iowa Test of Basic Skills, which essentially reflects the norms of white middle class students, may not adequately represent the true achievement level of the typically low socio-economic status of black students residing in the St. Louis Public Schools. Since the study is based on changes in rates of growth on the test, this argument loses much, if not all, its force.

Another broad limitation of this research stems from the omission of many aspects of student's school environments from the statistical analysis

contained in this research. For example, the measures of teacher characteristics used in this study do not include variables of a psychological nature such as personality and teaching style, and no measure to account for how students are actually spending their time in school are included in this investigation. As a consequence of these omissions, one can only speculate about the cultural cause of the research findings.

In addition, a methodological issue deserves some attention. Because this research was not conducted as a controlled experiment, it was not possible to systematically manipulate levels of school characteristics constant in an effort to assess the impact of changes in specific school factors on students' academic growth rates. As a substitute, statistical techniques had to be used to detect what types of changes in school environments are associated with accelerated rates of achievement growth. Causal inferences derived from this type of research are tenuous.

Four limitations of a more specific nature should be considered. Three of these are linked directly to the nature of the sample utilized in this study and can be characterized as threats to the generalizability of the results, while the fourth involves the relatively short duration of time for which data were gathered.

First, the sample utilized in this study contained only 624 students. This relatively small sample size raises the possibility that the research findings might not be perfectly replicated in a similar study utilizing a different sample of students.

Second, the sample was composed exclusively of black students in the St. Louis Public Elementary Schools. Because the sample contains students concentrated in a single geographic location, questions can be posed concerning the population to which the research results can be generalized. It is unclear whether the findings of this study are applicable to black children residing in every urban school system. Replication is in order

Third, the students included in this study were not part of a comprehensive court-ordered desegregation program, rather they were transferred primarily as the result of relatively small scale administrative decisions related to overcrowding and school closings. Hence, the widespread political conflict which typically accompanies broad school desegregation programs was not experienced. Because intense political conflict in the surrounding community may have an impact on pupil performance in the receiving school, questions must be raised as to whether the findings of this research are applicable to school systems in the midst of implementing massive pupil relocation programs.

Finally, in this research, pupils' academic progress was monitored for only one year before and after their relocation to a new school. As a result of this relatively short time span, this study necessarily examined the short-term effects of changing school environments, which may be quite different from the longer term effects.

POLICY RELEVANCE

Although the factors mentioned in the previous pages suggest that caution must be exercised when translating the results of this research into policy recommendations, two very basic implications for educational policy clearly emanate from this study. To begin, perhaps the most important contribution to school policymakers is to refute the notion that black students' educational experiences have little impact on their academic performance patterns. This research demonstrated that changes in the characteristics of school environments do play an important role in the determination of black students' academic outcomes, which suggests that if educational settings are manipulated correctly, the strong link which exists between the students' individual backgrounds and their academic performance can be severed. The findings of this research also have broad implications for school officials charged with the responsibility of formulating pupil assignment strategies. Because different types of moves do have dramatically different effects on student achievement patterns, officials should take into consideration the educational quality of school desegregation plans along with the more common concerns pertaining to constitutional complicance, political feasibility, and economic viability. To be sure, the satisfaction of court orders, the mitigation of community conflict, and the easing of financial strain are important aspects of pupil relocation programs, but the potential academic returns which might accrue to various pupil reassignment strategies must also be assigned a high priority.

With respect to the formulation of more specific policy recommendations, interpretations of the results become more complex. On the surface, it appears that the research findings can be directly translated into particular pupil relocation policies. For example, the findings suggest that the

transfer of black students could serve to increase the academic performance level of their peers and that the moves of black students originating in segregated classrooms should result in moderate as opposed to sharp changes in the racial composition of their classmates.

However, policy recommendations of such a specific nature are tenuous since the research did not provide an explanation for observed results. It is quite possible, for example, that the reason moves of black students who originated in predominantly black classrooms and ended in majority white classrooms were associated with lowered rates of growth, because teachers in majority white classrooms were not adequately trained to teach minority students. There is nothing in the research that disconfirms the proposition that special staff training programs could not reverse the negative effects.

Nevertheless, these findings do suggest that school administrators take into account both changes in classroom achievement levels and changes in classroom racial composition when formulating pupil assignment strategies. For this to occur, the initial steps which must be taken are for school districts to regularly collect comprehensive racial composition and achievement data and to create a data management system which can manipulate these data with facility.

Urban areas which are experiencing flight of the middle classes, both black and white, are hardly in a position to raise the academic performance level of students who are moved. Over time, such districts, which are probably common in America's urban areas, must be experiencing a decline in the number

of high achieving students who are available to raise the academic achievement of transferring students.

Forced desegregation, by contributing to the instability which causes middle class parents to withdraw from the system, may drain the schools of the academic talent that is needed to obtain the academic goals of desegregation. Given a choice, our data suggest that more emphasis ought to be placed on desegregation along achievement bases than along racial lines.

Conversely, the research findings lead to the conclusion that urban intra-district school desegregation programs are an academically viable means of beginning the process of desegregating America's public schools. The typical policy in urban school desegregation plans is to transfer students between schools so that the racial composition of each individual school mirrors that of the entire district. And as black students compose the majority in many urban school districts, transfers from predominantly black schools usually result in relatively moderate changes in classroom racial composition. Moreover, as white students tend to achieve at higher levels than black students, these moves probably also result in increases in classmates' ability levels.

Finally, because intra-district desegregation plans in many urban school districts would lead to a school system characterized by majority black schools, it is common to suggest that a cautious or gradual approach to intra-district school desegregation be undertaken -- one which seeks to avoid white flight and concomitant desegregation. In addition, fears of white flight often generate pressure for metropolitan remedies for school

segregation. Here the argument is that there would be little incentive for white families to flee the inner-city in order to dodge participation in school desegregation plans. However, the findings of this research bring into question the academic significance of white flight and its use to justify metropolitan desegregation strategies. Because black students in this sample appear to perform best in majority black classrooms, white flight may not have a deleterious impact on black academic performance. Moreover, the research findings suggest that metropolitan solutions to school desegregation which would result in black students becoming a minority within a white majority should be approached with a great deal of caution. This is not necessarily to say that moves of this nature cannot under any circumstances work to improve the academic performance of minority students, but rather to advocate that this type of desegregation program must be prepared carefully prior to implementation in order to minimize the effects of the factors which serve to depress black achievement. Two very plausible hypotheses as to why black students perform poorly in majority white classrooms are that teachers who have had little exposure to black children encountered difficulties when teaching them for the first time, and that black student experience "culture shock" when place in classrooms dominated by white students. Therefore, consideration should be given to developing strategies to overcome factors such as these before formulating pupil relocation policies which result in sharp changes in classroom composition.

Notes

1. Edmonds (1979) offers an excellent summary of this problem, and discusses the vital need for creating effective school environments for minority students.

2. A detailed discussion of the minimum competency movement can be found in (Pipho, 1978).

3. New York Times, 11 January 1979.

4. Averch et. al. (1974) and Bridge et. al. (1979) provide an in depth survey of previously conducted studies of school effects.

5. In 1966 the U.S. Office of Education funded a research effort conducted by James Coleman and his associates, which attempted to identify the correlates of student achievement.

6. Spady's (1974) review of the literature contains a description of the most basic methodological problems confronting school effects researchers.

7. A complete report of the analysis is found in Frelich (1981).

8. Edmonds, op. cit.

9. In a document prepared by the U.S. Commission on Civil Rights, Wilson finds a correlation between racial and social isolation and poor achievement.

10. McDill et. al. (1969) demonstrates that school learning environments as defined by such things as the value system which pervades the classroom, are related to levels of student performance.

11. In a study of 25 black inner-city elementary school pupils in Portland who were bused to an uppoer-middle class school, Rist identifies various factors which serve to depress the performance of black students in desegregated schools.

12. Rosenthal and Jacobson (1968) develop the theory that children assume the behavioral role that meets with the teacher's expectations of them.

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